

## Shape Memory Alloy-Based Periodic Cellular Structures, Phase I

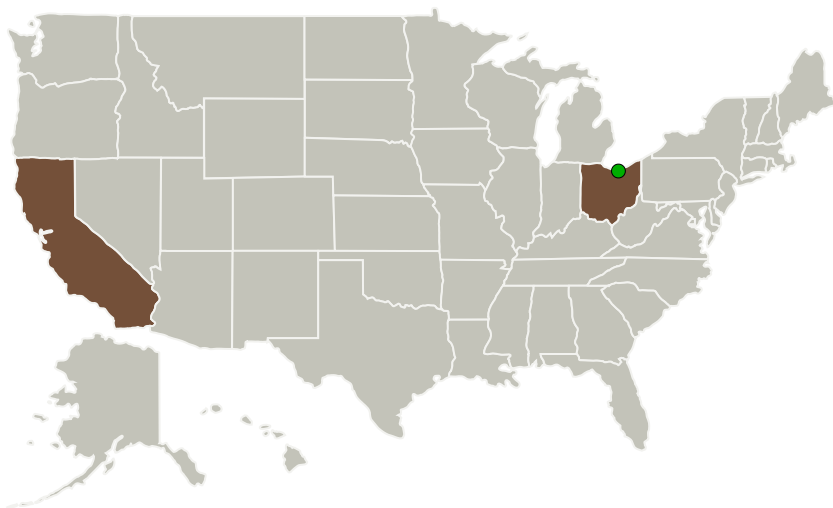
Completed Technology Project (2010 - 2010)



## Project Introduction

This SBIR Phase I effort will develop and demonstrate an innovative shape memory alloy (SMA) periodic cellular structural technology. Periodic cellular structures (PCS) will be designed and tailored to determine if additional shape memory performance benefits can be derived from the underlying macro-structure when fabricated from SMA's. These structures will be manufactured using an advanced reactive metal casting technology that will allow complex-shaped, integral bulk structures to be fabricated with the requisite composition-microstructure-properties needed for shape memory performance. Casting also offers a relatively low-cost approach for fabricating near net-shape components. The fabricated SMA structures will be characterized for resulting microstructure-properties in order to determine how to best design such PCS to better exploit SMA's for use in aerospace applications.

## Primary U.S. Work Locations and Key Partners



Shape Memory Alloy-Based  
Periodic Cellular Structures,  
Phase I

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## Shape Memory Alloy-Based Periodic Cellular Structures, Phase I



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Organizations Performing Work	Role	Type	Location
Transition45 Technologies, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	Orange, California
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

## Primary U.S. Work Locations

California	Ohio
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## Project Transitions

**January 2010:** Project Start**July 2010:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/139928>)

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Transition45 Technologies, Inc.

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Edward Chen

**Co-Investigator:**

Edward Y Chen

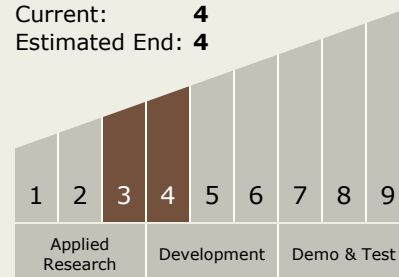
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## Technology Maturity (TRL)

Start: **3**  
Current: **4**  
Estimated End: **4**



## Technology Areas

### Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - └ TX12.1 Materials
    - └ TX12.1.8 Smart Materials

## Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System